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IS FROZEN

(drafts continue as needed)

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d3 → 14

95.6.23

Confidential

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Sapporo HyperLab

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Kiyoki Ookubo's

Fantastica™

Computer Language
+ User Environment

A Brief Introduction
and
Discussion of Business Prospects

Theodor Holm Nelson
Research Fellow, Sapporo HyperLab

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for
delivered code

AUG 19 1995

FANTISTICA
BYTE CODE

AUG 30 1995

Kiyoki Okubo's

Statistica

Computer Language

A Brief Introduction

and

Discussion of Business Prospects

Theodor Holm Nelson
Research Fellow, Swarthmore Hypertext

summary

INTRODUCTION

This is a preliminary introduction to "Fantastica," its capabilities and its market potential.

Mr. Ookubo is seeking investment and business counsel in making the best of this asset.

STRONG POINTS of "Fantastica"

Fantastica is a completely general-purpose language, with the deep object-oriented capabilities of Smalltalk, and Smalltalk's ease of programming, together with fast, efficient execution. Thus it combines the desirable characteristics of Smalltalk and C++.

CONFIDENTIAL: "FANTASTICA" FOR DVL

SUITABILITY FOR NETWORK DELIVERY OF ~~PROGRAMS~~ FUNCTIONALITY
Sketch (file access restrictable/selective)

POSSIBLE HIGHER-LEVEL
COMPETITION FOR "JAVA"

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Confidential

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Kiyoki Ookubo's

Fantastica™

Computer Language

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m-fw interpreter
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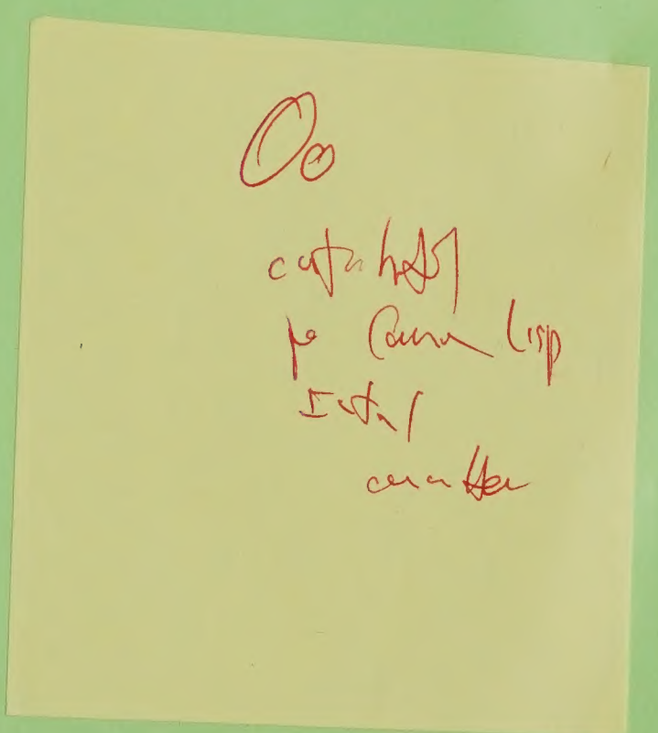
CONFIDENTIAL: "FANTASTIC" FOR DVL

SUITABILITY FOR NETWORK DELIVERY OF PROTOTYPE FUNCTIONALITY
Sketch (file access restrictable/checkable)

POSSIBLE HIGHER-LEVEL COMPETITION FOR "JAVA"



PROBLEMS OF MARKETING A LANGUAGE TO THE PROGRAMMING COMMUNITY

Large organizations
Small organizations and individual programmers
Dr. Dobbs

THE COMPUTER LANGUAGE MARKET

information medium.

recode: as run-time

POSSIBLE MARKETS

information medium.

PARTICULAR STRONG POINTS

information medium.

DIFFICULTY

information medium.

USES

information medium.

modelling

THE REAL ISSUE IS THE TARGET GROUP

information medium.

THE DOCUMENTATION PROBLEM

information medium.

SMALL PROGRAMMER MARKET

The market here would be selling the processor and letting others develop additional software

MARKETING TO LARGE PROGRAMMING FIRMS

Adobe, Lotus...

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HOBBYIST MARKET
Not significant

POSSIBLE PACKAGINGS & PRICINGS
Shareware, Net, CD-ROM A CONTINUUM
information medium.

WHAT WOULD BE NEEDED FOR DIFFERENT PLATFORM STRATEGIES
information medium.

PLATFORM STRATEGIES
The Corporate Workstation Strategy
information medium.

The Macintosh Strategy
information medium.

The Linux Strategy
information medium.

The Network Strategy
information medium.

A Net Sales Site
information medium.

STAFFING TO SELL
A Well-Informed Marketer
Smalltalk Experience
Graphics Knowledge
information medium.

ROLLOUT
Dr. Dobbs
information medium.

Selling to the Modelling Market
information medium.

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STARTING TO SELL

A Well-Informed Marketer
Small-talk Experience
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information medium.

ROLLOUT

Dr. Dobb's

information medium.

Selling to the Modelling Market

information medium

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Competition in the Modelling Market
information medium.

The Modelling/Programming Market
information medium.

Fantastica's Byte Code
information medium.

Fantastica's Syntax
information medium.

The Simulation Market
information medium.

THE FRONT-END MARKET

"fantastic" for extensions to other systems —

3D Studio
Photoshop
Topcad

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What a Computer Language Is

A computer language is a system for making computers do things, usually by typing specific commands. The complexity of computer programming derives from the intricacy of possible combinations, ramifications and errors. Computer programming, or the use of computer languages, is a difficult art. The design of languages for computer programming is in many ways even more complex. But the objective is simplicity.

The objective of a good computer language is to make the work of the computer programmer simpler and more effective, so that the programmer's investment of time, attention and hard work will have the maximum benefit-- in terms of programs that work well and efficiently, are easy to debug, and are easy to improve and maintain.

Different Languages on the Market

Most of the commercial computer programs on the market today are written in "C," although there is increasing acceptance of C++. However, many other languages are in use throughout the world. "Assembler language," or the particular language of each chip, is still used for extreme speed and compactness of code.

Beginners use "Basic" to a great extent. Microsoft's Visual Basic, which is not actually related to Basic, has had considerable recent success.

Within the programming community, two other families of language are of considerable importance. One is the lambda-calculus family of language, including Lisp, Scheme, Common Lisp, Trac and Sam76. These are recognized as general-purpose "hacker" languages, good for throwing programs together but poor for maintenance. Another is the Smalltalk family of interpretive object-oriented programs, especially Smalltalk, Smalltalk Agents, and a variety of related research languages. These, too, permit rapid prototyping, but they tend to be very inefficient.

There is no room here to go into the many research languages now available.

Algol and Pascal have been popular in mathematical communities.

APL has had its day.

Graphics languages are of considerable importance. These tend to be libraries such as SGI's,various internationally standardized libraries.

System languages of importance in the Unix world are shell scripting languages (Bourne, Korn, csh, Perl, Tcl).

Particular objectives of "Fantastica"

The objective of Fantastica was to provide a language with the object-oriented features of Smalltalk but with high efficiency, especially for graphics applications.

Present Implementation of "Fantastica"

Fantastica is presently running and demonstrable on the Sony News Workstation (MIPS 3000 chip). It has also been compiled for the Sun Workstation (SPARC chip) and HP Workstation (PA Risc chip).

Syntax of "Fantastica"

Fantastica's syntax is based on Lisp, but with an object-oriented syntax based on parsing by the receiver (the first element named in each statement).

Form of execution of "Fantastica"

Fantastica executes through an interpretive byte code of its own. This has been designed for high efficiency.

Size of "Fantastica"

Fantastica's run-time package is 3 megabytes on the system it currently runs on.

"Fantastica" as a General-Purpose Computer Language

Fantastica is especially powerful as a general-purpose computer language for a number of reasons:

- Full power (comparable to Lisp)
- Large library of graphics functions
- Fast execution, especially for computer graphics
- Trace and debugging facilities, inspectors
- **Predeveloped Application Frameworks**
- **FULL LIBRARY OF INTERFACE FUNCTIONS**

This means that Fantastica could be the basis for any sorts of end-user systems.

FANTASTICA AS A PRODUCT FOR COMPUTER GRAPHICS

Fantastica may have market potential as a computing language with high graphics capabilities, particularly for modelling in three dimensions. Thus it is a complement to such systems as Autodesk's 3D Studio, which has powerful rendering facilities but bad or limited modelling and no programmability.

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Kiyoki Ookubo's

Fantastica™

Computer Language & User Environment

A Brief Introduction and *Discussion of Business Prospects*

[summary only]

Theodor Holm Nelson
Research Fellow, Sapporo HyperLab

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SUMMARY

This is a preliminary introduction to "Fantastica," its capabilities and its market potential. I am writing this as a personal favor to Mr. Ookubo. He is an artist; his art is expressed in this system.

Mr. Ookubo is seeking investment and business counsel in making the best of this asset.

Fantastica is a completely general-purpose language and programming environment with the deep object-oriented capabilities of Smalltalk, and Smalltalk's ease of programming, together with fast, efficient execution. Thus it combines the desirable characteristics of Smalltalk and C++.

It is especially suited to graphics and network delivery.

It works from a compressed byte code.

It was designed to be efficient for programmers and efficient for transmission. It is a reconfigurable environment; a safe module may be created for network delivery, like the Java safe module. With restrictions like those of Java (restricted file access), it can be made suitable for the network delivery of functionality, like Java; but with far more functionality, most conspicuously in the graphics area.

Kiyoshi Ookubo is the kind of craftsman called "superprogrammer" in the United States. He contributed to the design of the international standard language, Common Lisp (creating one instruction in particular), and has been honored with an invitation to the prestigious and exclusive Hacker Conference in California.

Delivered-To: alias-xanadu-net-ted@xanadu.net
X-Sender: thn@pop3.ecs.soton.ac.uk (Unverified)
X-Mailer: QUALCOMM Windows Eudora Light Version 3.0.6 (32)
Date: Thu, 31 Jan 2002 20:12:33 +0000
To: ted@xanadu.net
From: Ted Nelson <ted@xanadu.net>
Subject: :ms: Fantastica, as I understand it (fstca.d1
X-ECS-MailScanner: Found to be clean
X-MIME-Autoconverted: from quoted-printable to 8bit by hawk.ecs.soton.ac.uk id UAA10438

[from ViznBk, adapted as I went]

Hi Mr. Ohkubo--

I continue to think about your Fantastica. Tell me if I understand it correctly. Here are a number of different descriptions. The first may be the best, if correct.

0. Fantastica is a guest operating system and execution engine which runs in a very small kernel on both Windows and Linux, creating its own network among machines through secure-socket connections. It is programmed in its own dialect of CommonLisp (FantasticLisp?) and uses OpenGL to handle graphics. This permits very fast line-drawing and rendering. Since OpenGL is on all Windows machines, the graphics needs no further installation on Windows machines.

Which of these is correct?

2a. (Is this correct?) Because the Lisp employed is all-powerful, security must include the careful control of Lisp scripts which are propagated among systems.

2b. (Is this correct?) The Lisp dialect used has been carefully pruned to remove dangerous operations that could affect local files without the owner's knowledge.

2. Fantastica is a distributed graphical, simulation and programming environment for multiple users across the net.

3. Fantastica works on cooperating Windows and Linux machines, self-installing additional servers on cooperating machines.

4. Fantastica is extremely small; the main part fits on a floppy.

5. Peer-to-peer spawning and launching of fantastica engines can take place across the net.

6. The kernel is in C.

RECOMMENDATIONS.
Get to market NOW!

Open source under Sun license is highly desirable.
IDENTIFY THREATS, if you think you shouldn't make the kernel available.

I CAN BECOME INVOLVED WITH MARKETING if certain conditions are met.

PROPOSED BIZ MODEL 3-tier
- free
- cheap
- developer license

ADD XML BECAUSE EVERYONE WANTS IT.

SEPARATE NAME FOR HIS DIALECT--
- Fantast
- Phantom, PhantomLisp?
- Fanta (no conflict with soft drink trademark, it's another field)
- Fanlisp
- SELL ON TUCOWS

QUESTIONS
- Does OpenGL thread?
- LINUX TOO, RIGHT?
- Security Model? SHD BE CONSENT ON EACH.

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• http://www.sfc.keio.ac.jp/~ted/ • http://www.xanadu.net
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X-ECS-MailScanner: Found to be clean
X-MIME-Autoconverted: from quoted-printable to 8bit by hawk.ecs.soton.ac.uk id VAA15969

A peer-to-peer session kernel based on CommonLisp,
OpenGL and SecureSocket for sharing
Data, visualizations and application environments
across a network.

A UNIFIED USER MICROKERNEL ENVIRONMENT
for data, visualization and applications
based on CommonLisp and OpenGL
SHARABLE IN PEER-TO-PEER NETWORK SESSIONS
THROUGH SECURESOCKET.

A guest operating system.

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• Coordinates in USA Tel. 415/ 331-4422
Project Xanadu, 3020 Bridgeway #295, Sausalito CA 94965

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fantastica

FANTASTICA

/02.01.21

~~session~~

A peer-to-peer session kernel ~~for~~ based on Cannelisp, OpenGL and secure socket for sharing ~~applications~~ data, visualizations and multimedia environments across a network.

A UNIFIED USER MICROKERNEL ~~ENVIRO~~ ENVIRONMENT based on Cannelisp & OpenGL for data, visualizations and applications.

SHARABLE IN PEER-TO-PEER NETWORK SESSIONS THROUGH SECURESOCKET.

A guest operating system.

RECOMMENDATIONS — Get to market NOW!

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& CAN BECOME INVOLVED WITH MARKETING if certain conditions are met.

I CAN ~~RECODE IT~~ HOOK TO IT if certain conditions are met.

PROPOSED BIZ MODEL 3-tier
- Free ~~/ beta~~
- cheap
- Developer license

ADD XML BECAUSE EVERYONE WANTS IT.

SEPARATE NAME FOR THE DIALECT.
- FontJS (w, t)
- Phanton
- ~~FontST~~ Fonts
- FANLISP

Ellis says XML sucks

SELL ON TUCOWS.

DOES OPENGL Thread?
LINUX TOO, RIGHT?

QUESTIONS

Security model? Still BE CONSENT ON EACH.

FANTASTICA

01.12.21

A DISTRIBUTED GRAPHICAL, SIMULATION AND PROGRAMMING ~~ENVIRONMENT~~ ENVT FOR MULTIPLE USERS ACROSS THE NET.

WORKS ON COOPERATING WINDOWS MACHINES (Win Linux?)

SELF-INSTALLING ADDITIONAL SERVERS ON COOPERATING MACHINES.

☆ EXTREMELY SMALL; main part fits on a floppy.

OPENGL GRAPHICS for very fast live display and replay (OpenGL is on all Windows machines).

FANTASTICA ENGINE

PEER-TO-PEER SPAWNING & LAUNCHING of Fantastica engines

The rest is a dialect of Common Lisp.

KERNEL IN C.